

## Evaluation of Fungicides for Control of Brown Patch on Colonial Bentgrass

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### Objective

The objective of this research was to evaluate fungicides for their ability to suppress brown patch development.

### Rational

Brown patch, caused by *Rhizoctonia solani*, can be a serious disease of bentgrass fairways. Severe disease development results in off-color, unattractive, and often thinned turf that can adversely affect playability. During the hot humid weeks of mid-summer, superintendents often must rely on fungicides to limit damage associated with brown patch infection and spread. In order for superintendents to make informed decisions regarding fungicide selection, they require accurate and objective appraisals of fungicide performance.

### How it was done

The research was conducted at the Purdue University Daniel Turfgrass Research and Diagnostic Center in West Lafayette, IN. The experimental site was a stand of Bardot colonial bentgrass maintained at a height of 0.5 in. Fertilization, irrigation and aerification operations were done according to standard practices for colonial (creeping) bentgrass at fairway height. During spring and summer 2003, fertilizer (18-4-10) was applied at a rate of approximately 0.75 lb N per 1000 sq ft on 14 April and 16 July.

Individual treatment plots measured 3.3 ft by 6.6 ft (1m x 2m) and were randomized within each of the 4 replications. Plots were inoculated with a sorghum seed culture of *Rhizoctonia solani* on 20 June. Fungicide applications were made using a custom-built bicycle wheel boom sprayer. Three nozzles (Tee-Jet 8004 EVS, flat fan) were mounted approximately 12 in. apart on a boom located 12 in. from the ground. The sprayer was calibrated to deliver 2 gal per 1000 sq ft at 40 psi. All treatments were initiated on 11 June. The date of the final application was 6 August. As indicated in the tables, all treatments were applied at 14 day intervals.

Fungicide performance was evaluated at approximately 7-day intervals using the Horsfall Barratt system for visual assessment of disease severity. Data were subjected to analysis of variance and mean separation procedures. Results are presented in Tables 1a and 1b. Turf quality was also assessed on a regular basis using a 0-9 scale where a score of 9 represented excellent turf quality. Any score below 6.0 indicated unacceptable levels of turf quality. Turf quality evaluations are presented in Table 2.

### Results

The prevailing weather during July and August of 2003 was generally favorable for brown patch development. Two periods were markedly favorable. Heavy rains during the first 2 weeks of July, accompanied by high evening temperatures, resulted in extensive brown patch development. Another period of hot, humid

weather prevailed in early August and resulted in another bloom of brown patch activity.

The data in the tables are self-explanatory. In general, all of the strobilurin fungicides provided excellent control and maintained high turf quality throughout the season under what I would call high disease pressure. Prostar also performed well. The DMI treatments sustained a little more disease than expected, although in some cases, they were not statistically different from the strobilurins. There was no phytotoxicity observed in any of the plots.

Table 1a. Evaluation of fungicides for brown patch control on colonial bentgrass at fairway height. 2003

TRT	Fungicide	Application rate/1000 ft <sup>2</sup>	Brown patch severity (%)					
			Evaluation date					
			6/27	7/02	7/07	7/14	7/21	7/28
1	No fungicide		3.5	22.3	24.2	17.6	29.8	11.9
2	Chipco 26GT 2 SC	4.0 fl oz	0.0	0.0	1.6	1.6	2.1	1.7
3	Prostar 70WP	2.2 oz	0.0	0.0	1.6	1.1	0.0	1.3
4	Bayleton 50WP	0.25 oz	0.8	0.8	3.5	4.6	17.4	4.6
5	Compass 50WG	0.20 oz	0.0	0.0	1.6	1.6	0.8	0.8
6	Compass 50WG	0.25 oz	0.0	0.0	1.6	1.1	1.1	1.1
7	Heritage 50WDG	0.20 oz	0.0	0.0	1.3	0.8	0.0	0.8
8	Insignia 20WG	0.50 oz	0.0	0.0	1.3	0.8	0.0	0.0
9	Insignia 20WG alternate Iprodione Pro 2SE	0.50 oz 4.0 fl oz	0.0	0.0	1.6	1.1	0.8	0.8
10	Propiconazole PRO 1.3MC	1.0 fl oz	0.0	1.1	2.7	2.7	9.2	5.9
11	Eagle 1.67 EW	1.14 fl oz	0.0	1.3	1.6	2.1	3.5	3.5
12	Medallion 50WP	0.25 oz	0.0	0.8	1.6	2.1	2.1	1.9
13	Medallion 50WP	0.50 oz	0.0	0.0	1.6	1.9	1.6	0.8
14	Daconil Ultrex 82.5WDG	3.2 oz	1.9	1.6	1.6	2.7	17.3	2.7
Fisher's unprotected LSD, P=0.05			1.57	4.78	6.88	2.74	8.00	3.28

Table 1b. Evaluation of fungicides for brown patch control on colonial bentgrass at fairway height. 2003

TRT	Fungicide	Application rate/1000 ft <sup>2</sup>	Brown patch severity (%)			
			Evaluation date			
			8/04	8/11	8/18	8/25
1	No fungicide		20.4	14.8	27.0	17.5
2	Chipcoo 26GT 2 SC	4.0 fl oz	2.1	2.4	7.3	12.9
3	Prostar 70WP	2.2 oz	0.8	0.8	1.3	1.1
4	Bayleton 50WP	0.25 oz	4.1	1.9	3.3	6.5
5	Compass 50WG	0.20 oz	0.0	0.0	1.3	1.3
6	Compass 50WG	0.25 oz	0.0	0.8	0.8	0.0
7	Heritage 50WDG	0.20 oz	0.0	0.8	0.8	0.0
8	Insignia 20WG	0.50 oz	0.0	0.0	0.0	0.0
9	Insignia 20WG alternate Iprodione Pro 2SE	0.50 oz 4.0 fl oz	1.1	0.8	0.0	0.0
10	Propiconazole PRO 1.3MC	1.0 fl oz	15.4	6.0	27.0	14.6
11	Eagle 1.67 EW	1.14 fl oz	8.2	2.1	4.6	3.2
12	Medallion 50WP	0.25 oz	2.1	1.7	6.5	6.5
13	Medallion 50WP	0.50 oz	1.3	1.1	2.1	2.7
14	Daconil Ultrex 82.5WDG	3.2 oz	1.9	0.8	4.0	3.8
Fisher's unprotected LSD, P=0.05			7.41	3.17	8.61	8.29

Table 2. Turf quality evaluations for fungicides applied to colonial bentgrass for brown patch control. 2003

TRT	Fungicide	Application rate/1000 ft <sup>2</sup>	Turf quality Evaluation date							
			7/02	7/14	7/21	7/28	8/04	8/11	8/18	8/25
1	No fungicide		6.3	5.0	2.2	4.5	5.0	6.0	4.8	4.8
2	Chipcoo 26GT 2 SC	4.0 fl oz	7.3	7.0	6.8	7.0	6.8	7.5	6.3	6.3
3	Prostar 70WP	2.2 oz	7.3	7.5	7.8	7.3	8.0	8.0	7.3	7.3
4	Bayleton 50WP	0.25 oz	7.0	6.0	5.5	6.3	6.8	8.0	7.0	6.5
5	Compass 50WG	0.20 oz	7.5	7.5	7.8	7.5	8.5	8.0	8.0	7.8
6	Compass 50WG	0.25 oz	7.3	7.8	8.0	7.0	8.0	7.8	7.5	8.0
7	Heritage 50WDG	0.20 oz	7.5	7.8	7.5	7.5	8.0	7.8	8.5	8.0
8	Insignia 20WG	0.50 oz	7.5	7.8	8.0	8.0	8.5	8.8	8.5	8.0
9	Insignia 20WG alternate Iprodione Pro 2SE	0.50 oz 4.0 fl oz	7.5	7.8	7.8	7.5	8.0	8.5	8.3	8.0
10	Propiconazole PRO 1.3MC	1.0 fl oz	7.0	6.5	5.3	5.8	5.8	7.3	5.0	5.8
11	Eagle 1.67 EW	1.14 fl oz	7.0	6.8	6.0	6.0	6.5	7.5	6.5	7.0
12	Medallion 50WP	0.25 oz	7.5	6.8	6.5	6.8	7.0	7.3	6.0	6.5
13	Medallion 50WP	0.50 oz	7.5	7.0	7.3	7.5	7.8	7.8	7.0	7.0
14	Daconil Ultrex 82.5WDG	3.2 oz	7.0	6.3	4.5	6.8	7.3	8.0	7.3	6.8
Fisher's unprotected LSD, P=0.05			0.64	0.71	1.57	0.88	0.82	0.88	0.91	0.72